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ABSTRACT

An examination of problems inherent in class size concepts suggests possible arrangements, given limited resources, for providing optimal classroom environments. Among the problems in determining class size are ambiguous definitions, measurement problems, and contradictory research findings. Traditional definitions of class size ignore such practices as team teaching, volunteers, and ability grouping. Class size measurement problems arise when researchers use such inconsistent measures as pupil-teacher ratio, averages, teacher contact hours, or teacher load. These measures tend to obscure qualitative differences. Class size research falls into three general categories: academic achievement, process variables (teacher innovation, teaching styles, and teacher load), and financial dimensions. Academic achievement and process variables research produce contradictory results; research on costs, however, uniformly concurs that smaller classes cost more than larger ones. Given these problems, the study proposes building-level committees composed of the principal, several teachers, and parents who would focus on individual classes and contexts at the start of the academic year rather than on district-wide determinations of class size. Adjustment strategies available to such committees include modifying the distribution of instructional staff, altering instructional methods, altering the distribution of students, and eliminating negative factors such as the presence of disturbed children in large classes. (PB)

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CLASS SIZE IS NOT THE ISSUE*

by

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Major Products Emanating from
Organizational Responses to Decline
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Peabody College of Vanderbilt University
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This paper is one of several products emanating from the research titled Organizational Responses to Decline. The complete list (to date) is as follows:

1. Berger, M. Two paradoxes in managing decline: Comprehensive planning and participation. In Kae H. Chung (ed.). The 1982 Academy of Management Proceedings. Loveland, Colorado: Lithographic Press, 1982, 334-338.

   This paper was also awarded the "1982 Best Paper in the Public Sector Division" of the Academy of Management at its 1982 Annual Meeting in New York, August, 1982.

2. Berger, M. Class size is not the issue. Paper presented at the National School Board Association Annual Meeting, Atlanta, April, 1982.

3. Berger, M. Organizational Responses to Decline: Summary Report. Submitted to the National Institute of Education, December, 1982.

4. Berger, M. Managing enrollment decline: Current knowledge and future applications. Peabody Journal of Education, 1983, (Forthcoming).*

5. Berger, M. Neighborhood schools: The new (?) legal response to enrollment decline and desegregation. Urban Education, 1983, (Forthcoming).**

6. Berger, M. Retrenchment policies and their organizational consequences. Peabody Journal of Education, 1983, (Forthcoming).*

7. Berger, M. Stages in decline: How educational organization scales down. Educational Administration Quarterly, 1983, (under review).**

8. Berger, M. Studying enrollment decline (and other timely issues) via the case survey. Educational Evaluation and Policy Analysis, 1983, (Forthcoming).**

9. Berger, M. Why communities protest school closings. Education and Urban Society, 1983, (Forthcoming).**

10. Boone, C. The effects of succession on organizations in decline. Doctoral Dissertation, Peabody College of Vanderbilt University, Nashville, Tennessee, April, 1982.

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CLASS SIZE IS NOT THE ISSUE

When invited to make this presentation, I looked forward to the opportunity to place the class size issue in the context of my current research on school district responses to declining enrollment. Like most observers of public education, I assumed that declining enrollment would ultimately lead to lower costs and to smaller classes. I also believed that smaller classes were better because they provided an excellent opportunity to improve the quality of education in a school system.

As I delved into the complexity of the declining enrollment issue, however, I noticed that a reduction in the number of children in a system was not always associated with a proportionate decrease in educational expenditures. To the contrary, uncontrollable fixed costs, multiple governmental mandates, and inflation often meant that it took more and more dollars to educate fewer and fewer students (Berger, 1982). I also learned that if classes did shrink, this might have positive educational effects, as the conventional wisdom predicts, but that these benefits were also associated with an increase in teacher costs. Thus, a school board was often caught in a dilemma: should it allow class size to come down and incur relatively higher costs, or should it increase average class size and thereby enable the reduction of teachers (and costs), but at the price of reduced educational quality?

Since I knew that considerable work had been done on the class size issue, and since I believed that with a little research I could offer a few suggestions to unravel the apparent Gordian knot, I embraced my assignment and set out to learn when and how to increase class size.

To my surprise and some degree of panic, the more I read, the more I realized there is a paradox surrounding the class size issue: despite

the volume of research on the topic, we really know very little about class size and class size effects. Almost eight decades of educational research and hundreds of studies have produced few empirically verifiable generalizations to guide the formulation and implementation of educational policy.

The impact of this paradox should not be underestimated. It goes to the very heart of our purpose here this morning. Implicit in the name of this clinic is a belief in the class size concept and the assumption that increasing class size can have noticeable and positive effects. Moreover, the focus of this session assumes that criteria exist to indicate when class size should be increased and how a district might safely accomplish that action. I will argue, in contrast, that the class size concept has limited usefulness, that we really know very little about the effects of either raising or lowering class size, and that by and large the focus on class size represents an oversimplification of a very complex phenomenon. In the remainder of this presentation I would like to: (1) examine some of the problems with the class size issue; (2) indicate what I believe to be the more central question implied; and (3) propose some strategies for dealing with the underlying problem.

Problems with the Class Size Issue

Typical questions which guide any discussion on class size usually sound something like this: "What is the optimal elementary class size for a quality education?" "Our average class size is 26.5; is that too high?" "Are smaller classes better than larger classes?" It seems to me that any discussion that begins with these kinds of questions elicits two kinds of responses. On the one hand, the listener might state the conventional wisdom that smaller is better and, if he or she is an academic or a member of a strong teacher's union, we might even see a laundry list of studies to substantiate that belief. On the other hand, a more informed and

cautious person might respond by stating that "it all depends" and that more must be known about the nature of the intended outcomes and other factors present in the learning situation. In either case, discussion is not likely to be very fruitful. Part of the hopelessness is related to the lack of precise meaning and measurement of the class size concept, the contradictory nature of the research evidence, and the misguided attempt to disengage class size from its rightful educational context. I will discuss each point briefly in turn.

Ambiguous Definition and Measurement Problems

The first difficulty with any class size discussion involves a basic problem of what is meant by the class size concept (Thompson, 1978). Most people define class and class size in terms of the traditional self-contained classroom with one teacher. But modern day educational practice involves the use of team teaching, para-professionals, volunteers, ability grouping within classrooms, and student rotation between various teacher specialists. Students may start out in some identifiable classroom unit, but they dissolve rather rapidly into a myriad of groupings within or between classes which defy precise definition.

To digress for a moment, the meaning of "small" and "large" is as ambiguous and relative as the term "class." One researcher discovered that when he compared various studies on class size, some of his predecessors defined a large class as one composed of more than twenty-five students, while others defined a small class as less than thirty students. What was a large class to some was a small class to others (McCluskey, 1978). Fleming (1959) pointed out that in 1929, when most classes had over forty students, teachers favored smaller classes of thirty-five. Ten years later, teachers desired classes of thirty. By 1949, when classes averaged closer

to thirty, teachers set the breaking point at twenty-five. More recently, the NEA's executive director, Terry Herndon, set the figure at 18 to 22 students for elementary classes (Thompson, 1978).

To rescue the situation, researchers and laypersons have relied on various measures to define what they mean by small and large class size. Common examples include pupil-teacher ratio, average class size, teacher contact hours, and teacher load. The problem is that these aggregate measures are used inconsistently, mask the subtleties in the data, and tend to obscure the qualitative differences in classes of equal size. For example, when a person states that the average class size in a district is 23.2, he or she is stating a summary statistic; actual class sizes may vary from five students in photography to 55 in band. Moreover, stating the average class size fails to distinguish between a classroom of 25 students with wide-ranging academic deficiencies at one end of the hall, and a class of 25 students at the other end of the hall who are all academically gifted. With so many difficulties in defining and measuring class size, it is a wonder that the concept is used for anything more than a bargaining chip to extract more money or benefits from beleaguered school boards.

Contradictory Research Evidence

Ideally, any decision on whether to reduce or increase class size, assuming agreement on the meaning and measurement of the concept, should be based on educational criteria derived from the scientific investigation of the effects of variations in class size on a whole host of outcome variables. We know that practice should inform research and research, in turn, should guide practice; thus, we should let science be our guide.

Regrettably, educational research on the impact of class size is not very helpful. Since time does not permit a full-scale discussion of the literature, I have included some of the more comprehensive, integrative reviews in the bibliography of this presentation (see Bozzomo, 1978; Hess, 1978, 1979; Millard, 1977; South Carolina Department of Education, 1980; Thompson, 1978).

Examining these articles, one finds that class size is one of the most thoroughly researched topics in all of public education. By 1950, over 250 separate studies dealt with class size. As the debate continued, related research increased proportionately. Most recently, Gene Glass and his associates conducted a comprehensive re-analysis of class size effects on achievement (see Cohen and Filby, 1979; Glass, 1980; Glass and Down, 1979) which was bitterly opposed by members of the Educational Research Service (1980a, 1980b). Thus, I am pleased to report that the class size controversy is alive and well.

Class size studies tend to fall into three general categories: effects on academic outcomes (usually achievement), process variables, and financial dimensions. With a wide variation in definition and measurement of small vs. large classes and a focus on virtually every level of education and various subject areas, the research shows that either no differences exist in student achievement between small and large classes, that large classes are superior, or that smaller classes are superior. A wide ranging analysis of American literature on the topic in 1975 called the connection between class size and pupil performance a contention not well supported either by research or any consensus in the literature (New England School Council, 1975). Hess probably summed up the situation best when he stated:

> The subject of pupil achievement and class size seems to be one of those rare issues which has, at the present time, been thoroughly researched from almost every possible perspective. It is also one of those equally rare issues with no universal conclusions. (1978, p. 60)

Unlike the proliferation of studies on academic outcomes, the studies on class size and process variables are not as numerous. Researchers have looked at the effects of class size on teacher innovation, teaching styles, and teacher load. As in the case of academic outcomes, research in this area produces no definitive evidence that any of these three variables is affected by variations in class size (Hess, 1978). In fact, some studies suggest that teacher behavior tends to be relatively consistent regardless of class size, although teachers were found to prefer smaller classes.

The final area is the effect of class size on financial dimensions. In contrast to the lack of consensus suggested above, studies in this area concur that large classes are less costly than smaller ones (Varner, 1969). Whether the financial dimension is facility utilization, faculty salaries, or cost effectiveness, the evidence remains the same: smaller classes cost more money than larger classes.

Thus, we are brought to the inescapable conclusion that, with the exception of financial considerations and teacher preferences, there is no general relationship between any educational variable and class size. Despite the masses of research on the topic, nothing suggesting an optimum class size has been established (Hess, 1978). Apparently, science cannot be our guide and we must depend on other criteria.

Taking Class Size out of Context

The conclusion suggested above should not be very surprising. A basic problem with most of the research is a failure to consider class size

in its proper context. Class size operates as only one of many factors which affect education outcomes and processes (Thompson, 1978). Other variables which interact with class size, that is, which may be equally as important, include:

- Student characteristics, such as intelligence, achievement level, health, family background, emotional stability, motivation, and special needs;
- Heterogeneity of students in a class;
- Teacher characteristics, such as competency, experience, motivation, attitudes toward class size, and inclination to use diverse teaching methods;
- Availability of teacher aides;
- Instructional program and materials;
- Inservice training on adaptation to various class sizes;
- Variety of content areas;
- Learning methodology employed;
- Principal supervision. (Bozzomo, 1978; Thompson, 1978)

Whether one believes that class size matters or not, it does not produce its effects in isolation from the other elements in the teaching-learning situation. Focusing on class size alone is like trying to determine the optimal amount of butter in a recipe without knowing the nature of the other ingredients.

The More Central Issue

The major problem in most debates about class size is that they become irretrievably focused on the numbers -- maximums and minimums --and thus fail to consider the more general issue, which includes (but goes beyond) the class size question (Stennett, 1973). The broader issue is: assuming a limited amount of resources, how can we arrange the various elements of the teaching-learning situation so that teachers can teach

at some minimal level of acceptability and students can learn in the most conducive educational environment?

I grant that one important element in this question may be class size, but phrasing the issue in this broader way avoids any specific numerical standard and transforms the focus from increasing class size to modifying the instructional arrangements, at little or no added cost.

The next two obvious questions are: (1) When does one identify those situations which seem to have an adverse effect on teaching and learning? and (2) Once identified, how can such classroom arrangements be modified? It would be presumptuous to contend that there are universally accepted answers to these two questions; however, I believe that we can develop some practical strategies which respond to these questions.

Strategies

Determining Problem Classes (The "When" Issue)

If it is true that the literature provides no educational criteria for modifying classroom arrangements, then the timing of such decisions will be based on political criteria, such as a trade off of increased class size for higher teacher salaries. (McCluskey 1978). In contrast, the process I propose avoids expensive political trade-offs and focuses on individual classrooms rather than district-wide ratios. It is adapted from a recent proposal by Parker (1979) which appeared in the May, 1979 issue of The American School Board Journal and an article by Stennett (1973).

Determining the instructional arrangements which have an adverse effect on teaching and learning in the classroom should not hinge on contract negotiations. By October, teachers know the conditions in their classes which are either facilitating or inhibiting the learning process. At that time, a building-level committee on instructional arrangements,

composed of the building principal, several teachers, and parents, should conduct an audit of every classroom in terms of the factors which are adversely affecting the learning. This does not need to be an elaborate endeavor. One can imagine a checklist which would allow administrators, the teachers, and parents to identify the problematic situations.

In the Weighted Pupil Plan described by Parker (1979), teachers petition a committee, made up of administrators and teachers, for class size relief based on a weighted number which accounts for children whose special situations tend to compound the effects of class size for that teacher. Under my proposal, the classroom arrangements committee includes parents, does not wait for teacher applications, and focuses on factors including, but not limited to, class size. While the Weighted Pupil Plan generates a new, adjusted class size figure, the plan I propose generates opinions from a wide range of sources and depends heavily on an atmosphere of cooperation, hard work, and creativity between the committee and the teacher to develop solutions. Later in the school year there should be an informal follow-up audit to determine the impact of the various modifications and make further adjustments, if necessary.

Modifying Instructional Arrangements (The "How" Issue)

For purposes of illustration, let us assume that we could identify those classes where the number or nature of the students appears to interfere with the educational process. I will outline four general strategies and provide illustrations within each one. Naturally, this list is meant to be suggestive rather than exhaustive.

Type I. Modify the distribution of instructional staff. This first response is an attempt to change the negative effect of certain class situations by altering the nature of instructional contact. At least three different examples

come to mind: (1) use low cost or no cost labor such as paraprofessionals, volunteers (senior citizens are prime candidates here), and older student tutors; (2) use non-instructional personnel, such as librarians and counselors, for instructional purposes (e.g., independent study supervision); and (3) automate some of the clerical tasks teachers perform (e.g., test scoring, attendance, and report cards) to free them for more instructional time.

Type II. Modify the instructional methods. Problems often occur in a classroom because the teacher uses methods which are better suited to a different situation. There are various instructional practices which could save teacher time, such as: (1) greater use of self-paced learning materials; (2) increased reliance on resource areas, listening centers, and small group work, and (3) more independent learning for capable youngsters.

Type III. Modify the distribution of students. This response attempts to change the negative learning and cost effects by increasing or reducing the numbers of children for all or some portion of the instructional day. By consulting directly with the teacher(s) involved, the committee could: (1) break up certain classes into smaller groups, if smaller structures were more desirable, or (2) merge certain groups together to obtain greater economies of scale and thus, release some teachers for planning or individualized student attention.

Type IV. Modify the exacerbating factors. This final group of responses leaves the original class size intact but attempts to alter those factors which tend to interact with the teaching and learning process to produce negative effects. An almost unlimited number of options exist here. For example, one could arrange that: (1) large classes not contain disturbed children; (2) the more skillful teachers handle more large groups; and (3) in-service training programs include modules on methods and "tips" for dealing with small and large groups.

These are just some of the responses that might be used to address the problem. I know that many of these are done now and I also believe that groups of concerned and creative educators could conceive many more.

Conclusion

Let me recap briefly the points I have made in this presentation. First, I have argued that the class size concept, despite its wide currency in the research literature, has very little practical meaning. I have come to this conclusion based on the ambiguity and measurement problems associated with the class size concept, the presence of contradictory research evidence, and the failure to conceive class size as one of many factors which affect the teaching and learning process.

Consequently, my second aim was to deflect attention away from the class size issue per se and to look more closely at what I consider to be the more important question, namely, how we can arrange the various elements in the teaching and learning situation so that teachers can teach to some minimum acceptable level and students can learn in the most conducive environment, without incurring exhorbitant costs.

Third, I proposed, in rough terms, a process for determining when certain classes exhibit those factors which seem to have an adverse effect on teaching and learning. This process included the formation of a committee on instructional arrangements which would audit every classroom to determine what problems exist and then to design modifications, in collaboration with the classroom teacher, to alleviate the problems.

My final point was to offer at least four types of responses which the committee could use to change the instructional arrangements. These responses included: modifying the distribution of instructional staff, altering the instructional methods, modifying the distribution of students, and changing those factors which tend to exacerbate the problems in the educational context.

In conclusion, I would like to state that teachers and school boards love to fight over class size. I doubt that any one of us would have the courage in the heat of battle to declare class size a "non-issue." However, I would like to see the energy and creativeness devoted to justifying the maximums, minimums, and ratios redirected toward the identification and modification of every less-than-satisfactory learning situation. I believe with a little joint planning and persistent problem solving, a variety of very creative options could be developed to increase educational quality without increasing educational costs.

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